

Amendments to the Claims

The following listing of claims replaces all prior versions and listings of the claims in this application:

1.-25. (Cancelled).

26. (Previously Presented) Jet injector for injecting a liquid medical drug through the skin of a person to be treated, comprising a housing adapted to be pressurized and hold said medical drug, defined by an enclosing periphery wall and a bottom wall having an internal surface facing the interior of the housing and an opposite external surface, the bottom wall having at least one through passage extending between said internal and external surfaces and through which, when the injector is used, said medical drug is adapted to be expelled from the housing and transformed into a thin jet stream penetrating the skin of said person, wherein said through passage includes a flow confining restriction to develop a high pressure in the medical drug expelled from the housing, wherein a body is connected to said passage and tapers in a direction away from the passage and terminates in a point, and wherein said body has a periphery surface adapted to receive the expelled medical drug and guide the expelled medical drug towards said point to create a coherent jet stream emerging from said point.

27. (Previously Presented) Jet injector according to claim 26, wherein said bottom wall has a through, truncated cone-shaped aperture defined by a wall, wherein an insert having an essentially cone-shaped body is arranged to be inserted into said housing such that a portion of said cone-shaped body, the periphery wall of which is essentially congruent to said aperture wall, is received in said aperture and wherein at least one passage is established between said portion of said cone-shaped body and the aperture wall through which the

medical drug is adapted to be expelled from the housing, whereby said drug then flows along said essentially cone-shaped body to be delivered from said point of the cone-shaped body as a coherent, thin jet stream.

28. (Currently Amended) Jet injector according to claim 27, wherein at least a part of said point of said essentially cone-shaped body has a concave periphery surface.

29. (Previously Presented) Jet injector according to claim 27, wherein said periphery surface of said essentially cone-shaped body, from its point to said passage, is concave.

30. (Previously Presented) Jet injector according to claim 27, wherein said essentially cone-shaped body is terminated in a sharp point.

31. (Previously Presented) Jet injector according to claim 27, wherein a positioning element protrudes from said bottom wall and terminates at a level beyond or at said point of the essentially cone-shaped body, and said positioning element is adapted to be placed on the skin of the person to be treated when injecting the medical drug.

32. (Previously Presented) Jet injector according to claim 31, wherein said periphery wall, bottom wall and positioning element of the jet injector are made in one piece of resin.

33. (Previously Presented) Jet injector according to claim 32, wherein the resin comprises polycarbonate.

34. (Previously Presented) Jet injector according to claim 27, wherein said insert is said essentially cone-shaped body, the base of which is positioned at the level of said internal surface of the bottom wall, when the injector is assembled.

35. (Previously Presented) Jet injector according to claim 27, wherein said insert comprises a head body arranged to be inserted in said housing close to said bottom wall and connected to said essentially cone-shaped body.

36. (Previously Presented) Jet injector according to claim 35, wherein said head body and the essentially cone-shaped body are made in one piece of resin.

37. (Previously Presented) Jet injector according to claim 36, wherein the resin comprises polycarbonate.

38. (Previously Presented) Jet injector according to claim 27, wherein said bottom wall is perforated by a single aperture centrally positioned on a symmetry axis of said housing, said point of the essentially cone-shaped body being positioned on said symmetry axis when assembled.

39. (Previously Presented) Jet injector according to claim 27, wherein a number of spacing means are provided between said insert and said bottom wall and/or between said

insert and said aperture wall, whereby a ring-shaped gap is formed between the periphery surface of said essentially cone-shaped body and the aperture wall.

40. (Previously Presented) Jet injector according to claim 39, wherein said spacing means are positioned between said internal surface of the bottom wall and an opposite surface of said head body.

41. (Previously Presented) Jet injector according to claim 40, wherein said spacing means comprise protrusions projecting from said internal surface of the bottom wall and/or from said surface of the head body.

-42. (Previously Presented) Jet injector according to claim 41, wherein said spacing means are bosses, pins, studs, ribs, or ridges, integrated in the surface or wall from which they project.

43. (Previously Presented) Jet injector according to claim 39, wherein said spacing means are positioned between said periphery surface of the essentially cone-shaped body and said aperture wall.

44. (Previously Presented) Jet injector according to claim 43, wherein said spacing means comprise protrusions projecting from said periphery surface and/or said aperture wall.

45. (Previously Presented) Jet injector according to claim 44, wherein said spacing means are bosses, pins, studs, ribs, or ridges, integrated in the surface or wall from which they project.

46. (Previously Presented) Jet injector according to claim 27, wherein said passage comprises a number of grooves formed in said aperture wall and/or in said periphery surface of the essentially cone-shaped body.

47. (Previously Presented) Jet injector according to claim 46, wherein a number of flutes are formed in a surface of said head body facing said periphery wall of the housing and in its surface facing said bottom wall, said flutes having a section area larger than that of said grooves, said flutes being adapted to pass pressurized medical drug from the interior of said housing into relevant ones of said grooves.

48. (Previously Presented) Jet injector according to claim 27, wherein said insert is a hollow body confined by a pliable, elastic thin-walled shell, said shell being adapted to deflect when subjected to pressurized medical drug such that a gap is temporarily formed between the cone-shaped body and said aperture wall admitting a medical drug flow therebetween.

49. (Previously Presented) Jet injector according to claim 27, wherein a pliable, elastic wall formed as a truncated funnel depends from said bottom wall and constitutes said aperture, the upper part of said pliable wall having a number of blind grooves and being adapted to deflect when subjected to pressurized medical drug such that a gap is temporarily

formed between the cone-shaped body and said pliable wall admitting a medical drug flow therebetween.

50. (Previously Presented) Jet injector according to claim 27, wherein said essentially cone-shaped body is solid and said body and said aperture are manufactured with coarse tolerances, said passage being formed by gaps occurring between said periphery surface of the body and said aperture wall.

51. (Previously Presented) A method for producing a jet injector for injecting a liquid medical drug through the skin of a person to be treated, the jet injector comprising a housing adapted to be pressurized and hold said medical drug, defined by an enclosing periphery wall and a bottom wall having at least one through passage, the method comprising:

(i) providing a mould for injection moulding of said periphery wall and bottom wall and a through aperture in said bottom wall;

(ii) machining portions of the wall of the mould forming an internal surface of said bottom wall and/or said aperture of the bottom wall such that recesses are created in the wall of the mould;

(iii) injection moulding, whereby protrusions are formed on said internal surface and/or on a wall of said aperture;

(iv) providing a mould for injection moulding of an insert having an essentially cone-shaped body intended to be received in said aperture and having a periphery surface essentially congruent to said wall of the aperture;

(v) in addition to or in place of step (ii), machining portions of the wall of the mould forming said periphery surface such that recesses are created in the wall of the mould;

(vi) injection moulding, wherein protrusions are formed on said periphery surface;
and

(vii) positioning said essentially cone-shaped body into said aperture by inserting said insert into said housing, a point thereof first, so that said protrusions contact an opposite surface or wall, thereby creating a passage designed as a substantially ring-shaped gap between said aperture wall and said periphery surface of the essentially cone-shaped body.

52. (Previously Presented) Method according to claim 51, wherein the recesses are created by milling, cutting, engraving, spark machining, or etching.

53. (Previously Presented) A method for producing a jet injector for injecting a liquid medical drug through the skin of a person to be treated, the jet injector comprising a housing adapted to be pressurized and hold said medical drug, defined by an enclosing periphery wall and a bottom wall having at least one through passage, the method comprising:

(i) providing a mould for injection moulding of said periphery wall and bottom wall and a through aperture in said bottom wall;

(ii) injection moulding;

(iii) machining a wall of said formed aperture such that grooves are created in said wall, said grooves extending from an internal surface of said bottom wall to its external surface;

(iv) providing a mould for injection moulding of an insert having an essentially cone-shaped body intended to be received in said aperture and having a periphery surface essentially congruent to said wall of the aperture;

(v) in addition to or in place of step (iii), machining said periphery surface such that grooves extend from an internal surface of said bottom wall to its external surface, when said insert is positioned into said aperture according to step (vi);

(vi) positioning said essentially cone-shaped body into said aperture by inserting said insert into said housing, a point thereof first, so that said periphery surface of the cone-shaped body contacts said wall of the aperture creating a passage designed as a number of tube-like flow paths between said aperture and said body.

54. (Previously Presented) Method according to claim 52, wherein the grooves are created by milling, cutting, engraving, spark machining, or etching.

55. (Previously Presented) A method for forming a thin jet stream of a liquid medical drug for injection into a target by means of a jet injector comprising a housing adapted to be pressurized and holding said medical drug and defined by an enclosing periphery wall and a bottom wall having an internal surface facing the interior of the housing and an opposite external surface, the bottom wall having at least one through passage extending between said internal and external surfaces and through which, when the jet injector is used, said medical drug is expelled from the housing, the method comprising:

(i) pressurizing said housing to expel said medical drug from the housing and through said passage;

(ii) restricting the flow of said medical drug from said housing to develop a high pressure in the medical drug flowing from said passage;

(iii) guiding the outflowing medical drug to an essentially cone-shaped body provided on said jet injector and connected to said passage, said body tapering in a direction away from the passage and terminating in a point;

(iv) causing the expelled medical drug to flow along a periphery surface of said body towards the point;

(v) focusing, at said point, the expelled medical drug into a homogeneous flow;
and

(vi) forming a coherent jet stream emerging from said point.